

Serial No.: 10/517,305
Atty. Docket No.: P70298US0

IN THE CLAIMS:

Please amend the claims as follows:

Claims 1-12 (Canceled).

13. (Currently Amended) A method for determining positions of targets in a position space using signals scattered by the targets, comprising:

using a plurality of transmitters and a plurality of receivers of electromagnetic or acoustic signals, spread in known points in the position space, each a bistatic pair of a transmitter and a receiver placed at different points being referred to as a measuring facility, the positions of the transmitters and receivers and the range of the transmitters being selected so that a target at an arbitrary point within the position space is measured by scattering in the target by at least four cooperating measuring facilities;

analyzing received signals, which includes determining moments of transmission and reception and parameterization of received signals as a function of the path of propagation between transmission point and reception point;

Serial No.: 10/517,305
Atty. Docket No.: P70298US0

selecting an even number of at least four cooperating measuring facilities for the target position determination;

associating targets by calculating, in two independent ways, two sets of sums of distances between transmission points and targets and, respectively, targets and reception points, based on bistatic distances, measured via the targets, for selected measuring facilities; sorting said two sums with respect to the distance; and comparing and establishing that the sums, calculated in the two different ways, which correspond with each other within a predetermined margin of error, are stated to correspond to conceivable targets;

completing and improving said target association by performing calculations for bistatically measured Doppler velocities, corresponding to calculations for distances, and establishing that the sums, calculated in the two different ways, which correspond with each other within a predetermined margin of error, are stated to correspond to targets; and

calculating the positions of the targets from a system of equations for the bistatically measured distances.

Serial No.: 10/517,305
Atty. Docket No.: P70298US0

14. (New) The method as claimed in claim 13, wherein the step of completing and improving target association further comprises:

calculating the sum of all distances between the targets and the transmission points and the reception points, respectively, in a third way as the sum of bistatically measured distances via the target for measuring facilities;

sorting the sum calculated in the third way with respect to the distance and comparing this with previously calculated sums of distances; and

establishing that those cases where two of the three sums, calculated in said different ways, correspond with each other within a predetermined margin of error, are stated to correspond to targets.

15. (Previously Presented) The method as claimed in claim 13, wherein the step of completing and improving target association further comprises:

calculating the sum of all Doppler velocities between the targets and the transmission points and the reception points, respectively, in a third way as the sum of bistatically measured Doppler velocities via the target for measuring facilities;

Serial No.: 10/517,305
Atty. Docket No.: P70298US0

sorting the sum calculated in the third way with respect to Doppler velocity and comparing this sum with previously calculated sums of Doppler velocities; and establishing that the cases where two of the three sums, calculated in said different ways, correspond with each other within a predetermined margin of error, are stated to correspond to targets.

16. (Previously Presented) The method as claimed in claim 14, wherein the step of completing and improving target association further includes requiring that all three sums, calculated in said different ways, correspond with each other within a predetermined margin of error in order for targets to be indicated.

17. (Previously Presented) The method as claimed in claim 15, wherein the step of completing and improving target association further includes requiring that all three sums, calculated in said different ways, correspond with each other within a predetermined margin of error in order for targets to be indicated.

Serial No.: 10/517,305
Atty. Docket No.: P70298US0

18. (Previously Presented) The method as claimed in claim 17, wherein the velocities of the targets are calculated from a system of equations for the bistatically measured Doppler velocities.

19. (Currently Amended) A system for determining positions of targets in a position space using signals scattered by the targets, comprising:

a plurality of transmitters and a plurality of receivers of electromagnetic or acoustic signals, spread in known points in the position space, each a bistatic pair of a transmitter and a receiver placed at different points being referred to as a measuring facility, the positions of the transmitters and receivers and the range of the transmitters being selected so that a target at an arbitrary point within the position space is measured by scattering in the target by at least four cooperating measuring facilities;

analysis equipment for storing and analyzing received signals and configured to determine moments of transmission and reception and to parameterize received signals as a function of the path of propagation between transmission point and reception point;

Serial No.: 10/517,305
Atty. Docket No.: P70298US0

 said analysis equipment being configured to select an even number of at least four cooperating measuring facilities for the target position determination and to associate targets by calculating, in two independent ways, two sets of sums of distances between transmission points and targets and, respectively, targets and reception points, based on bistatic distances, measured via the targets, for selected measuring facilities; to sort said two sums with respect to the distance; and to compare and establish that the sums, calculated in the two different ways, which correspond with each other within a predetermined margin of error, are stated to correspond to conceivable targets;

 said analysis equipment being further configured to perform calculations for bistatically measured Doppler velocities, corresponding to calculations for distances, and to establish that the sums, calculated in the two different ways, which correspond with each other within a predetermined margin of error, are stated to correspond to targets; and

 said analysis equipment being further configured to calculate the positions of the targets from a system of equations for the bistatically measured distances.

Serial No.: 10/517,305
Atty. Docket No.: P70298US0

20. (Previously Presented) The system as claimed in claim 19, wherein said analysis equipment is further configured to calculate the sum of all distances between the targets and the transmission points and the reception points, respectively, in a third way as the sum of bistatically measured distances via the target for measuring facilities, to sort the sum calculated in the third way with respect to the distance and compare this sum with previously calculated sums of distances, and to establish that those cases where two of the three sums, calculated in said different ways, correspond with each other within a predetermined margin of error, are stated to correspond to targets.

21. (Previously Presented) The system as claimed in claim 19, wherein said analysis equipment is further configured to calculate the sum of all Doppler velocities between the targets and the transmission points and the reception points, respectively, in a third way as the sum of bistatically measured Doppler velocities via the target for measuring facilities, to sort the sum calculated in the third way with respect to Doppler velocity and compare this sum with previously calculated sums of Doppler velocities, and to establish that the cases where two of the three sums, calculated in said different ways, correspond

Serial No.: 10/517,305
Atty. Docket No.: P70298US0

with each other within a predetermined margin of error, are stated to correspond to targets.

22. (Previously Presented) The system as claimed in claim 20, wherein said analysis equipment is further configured to require that all three sums, calculated in said different ways, correspond with each other within a predetermined margin of error in order for targets to be indicated.

23. (Previously Presented) The system as claimed in claim 21, wherein said analysis equipment is further configured to require that all three sums, calculated in said different ways, correspond with each other within a predetermined margin of error in order for targets to be indicated.

24. (Previously Presented) The system as claimed in claim 23, wherein said analysis equipment is configured to calculate the velocities of the targets from a system of equations for the bistatically measured Doppler velocities.